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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/574,820

## Applicant(s)

FUJIOKA ET AL.

## Examiner

NICOLA RADONIC

## Art Unit

4192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 1-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 4/6/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The **disclosure** is objected to because of the following informalities:

Spelling errors:

- a. paragraph 137 – 'week' should probably be 'weak'.

Appropriate correction is required.

2. **Abstract** is objected to because the last sentence is ambiguous "the plurality of image data that have been captured by the identical image capturing unit (103) at the same time". Where 'identical' implies multiple devices, 'capturing unit' implies a singular device and 'at the same time' implies multiple devices. Appropriate correction is required.

3. **Claim 39** objected to because of the following informalities: Grammar error: 'high-moving' should probably be 'high-speed moving'. Appropriate correction is required.

### *Claim Rejections - 35 USC § 101*

4. The claimed invention is directed to non-statutory subject matter.
5. **Claim 59 is rejected under 101** as being functional descriptive material.

**As per claim 59:** "A computer program embodied on a computer readable medium and executed by a computer for transmitting image data ..."

Applicant is advised of an example of acceptable language in computer-processing related claims: "computer readable medium embodied with a computer program ..."

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 31 through 59 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
8. **In claims 31 through 59**, the applicant fails to specify through antecedent what constitutes 'high speed', or why it would be a unique radio system, so all mobile radio systems are considered relevant prior art for examination of this application, and this phrase will be considered descriptive language.
9. **Claim 53 is rejected under 35 U.S.C.112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The limitation of adding a sequence number to the image data is not discussed in the specification, and thus there is no antecedent information supporting the claim.
10. **In claim 53**, the use of the term 'unit' is ambiguous, being used previously in the specification to describe amplifier units , selection units, and control unit. Also, the use of 'radio wave' does not clarify how communication is to be done, even if the 'units' terms are clarified.

11. In claim 59, Applicant's description of the claimed invention of the computer program in the specification at paragraph 26 does not support the claim sufficiently. Some or all of the functions claimed may be done alternatively with substitute hardware or software not supported by the enabling disclosure. This includes implied generation of timing, control of image transmission, control of image selection, and control of transmission frequencies.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: failing to identify what "characteristic table" means in the claim, while it is referenced indirectly in the specification, at paragraph 127, referring to "The control unit 142 has a characteristic table indicating a radio wave strength at a running position".

### ***Claim Rejections - 35 USC § 102***

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 54, 55, and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Asanuma (US 5983113).

16. **As per claim 54**, Asanuma teaches: A high-speed moving object (**Asanuma, Fig 1 PS1 where PS1 is the mobile device, but the term 'high-speed' is not defined in the specification and is thus treated as descriptive language – column 1 approx line 65**), comprising: at least one image capturing unit operable to capture image of inside of a car (**BACKGROUND OF THE INVENTION column 1 approx line 20: the digitized audio data and video data**) in said high-speed moving object; (**Asanuma, BACKGROUND OF THE INVENTION column 1 approx line 5: mobile stations**), a first communication unit operable to transmit (**Asanuma, Fig 4: BS**), the image data captured by said image capturing unit over radio wave of a first frequency (**Asanuma, Fig 4: Down Link Channel**), when control data indicating a transmission timing is received from a plurality of base stations installed along a path of movement of said high-speed moving object over radio wave of the first frequency; (**Asanuma, Fig 4: Transmission Timing Control**) a second communication unit operable to transmit (**Asanuma, Fig 4: PS**) the image data captured by said image capturing unit (**Asanuma, BACKGROUND OF THE INVENTION column 1 approx line 20: the digitized audio data and video data**), over radio wave of a second frequency (**Asanuma, Fig 4: Up Link Channel**), when control data indicating a transmission timing is received from the base stations over radio wave of the second frequency (**Asanuma, Fig 4: Phase Difference Sensor**).

17. **As per claim 55**, Asanuma teaches: A base station which relays image data transmitted between a high-speed moving object and a control center that manages a condition of the high-speed moving object, (**Asanuma, Fig. 1, BS1, CL, CL1 and CS blocks, DETAILED DESCRIPTION OF THE INVENTION column 4 approx line 60, and column 5 line 1**), said base station being one of: a first base station and a second base station installed alternately along a path of movement of the high-speed moving object, (**Asanuma, Fig. 1 BS1 and BS2 blocks**), the first base station having a first communication unit operable to transmit control data indicating a transmission timing over radio wave of a first frequency at predetermined time intervals, and to receive the image data transmitted from said high-speed moving object over radio wave of the first frequency and transmit the image data to said control

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center via a network (**Asanuma, Fig. 1 generic base station BS1 and Fig. 4, BS block diagram**), and the second base station having a second communication unit operable to transmit control data indicating a transmission timing over radio wave of a second frequency at predetermined time intervals, and to receive the image data transmitted from said high-speed moving object over radio wave of the second frequency and transmit the image data to said control center via the network (**Asanuma, Fig. 1 generic base station BS2 and Fig. 4, BS block diagram**),

18. **As per claim 58**, Asanuma teaches: A construction method of a wireless communication area for constructing the wireless communication area (**Asanuma, DETAILED DESCRIPTION OF THE INVENTION column 4 approx line 60: 'The system comprises a control station CS, a plurality of base stations BS1, BS2'**) where image data transmitted from a high-speed moving object can be received (**Asanuma, DETAILED DESCRIPTION OF THE INVENTION column 5 line 1: 'access the mobile stations existing in their own radio zones E1'**) said construction method comprising alternately arranging, along a path of movement of the high-speed moving object, a first wireless communication area where image data transmitted over radio wave of a first frequency can be received and a second wireless communication area where image data transmitted over radio wave of a second frequency can be received, so that the areas are partly overlapped. (**Asanuma, Fig. 1 BS1 and BS2, DETAILED DESCRIPTION OF THE INVENTION column 4 approx line 66: 'form radio zones E1, E2'**).

### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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20. **Claims 31, 39 – 41, 56, and 57** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma (US 5983113) in view of Hamlin (US 6907241).

21. **As per claim 31**, Asanuma teaches: A radio transmission system for a high-speed moving object (Asanuma, Fig 1 PS1 where PS1 is the mobile device – column 4 approx line 62, but applicant does not define the term 'high-speed' in the specification and is thus treated as descriptive language appropriate for any mobile radio system), in which image data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object (Asanuma, Fig 1 CS, BS1, and PS1, where image data goes from PS1 to the base station BS1, along CL1 to the control station CS) said radio transmission system comprising: a first base station and a second base station installed alternately along a path of movement of said high-speed moving object (Fig 1 BS1, BS2, PS1, where BS1 and BS2 are the base stations and PS1 is the moving object), said first base station having a first communication unit operable to transmit control data indicating a transmission timing over radio wave of a first frequency at predetermined time intervals (Asanuma, Fig 3, 4, 5A, 5B, 6A, 6B, Timing Diagrams with Phase Difference Sensor and Down Link Channel, column 2 approx line 27, described in the 'Brief Summary of the Invention' as 'each of the plurality of mobile stations receives the timing control information notified by the base station and controls the transmission timing of an up-link channel signal transmitted to the base station') and to receive the image data transmitted from said high-speed moving object over radio wave of the first frequency (Asanuma, BACKGROUND OF THE INVENTION column 1 approx line 20, specifies 'the digitized audio data and video data' and 'the inverse spread reception signal is demodulated'), and transmit the image data to said control center via a network (Asanuma, Fig 1 BS1, CL1, CS with CL1 being the connecting network) and said second base station having a second communication unit (Asanuma, Fig 1 BS2, base station 2) operable to transmit control data indicating a transmission timing over radio wave of a second frequency at predetermined time intervals (Asanuma, Fig 1 BS2 and Fig 4 Phase Difference Sensor) and to receive the image data transmitted from said high-speed moving object over radio wave of the second frequency" (Asanuma, BACKGROUND OF THE INVENTION



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column 2 approx line 20, references: 'the digitized audio data and video data' and 'the inverse spread reception signal is demodulated') and transmit the image data to said control center via the network (Asanuma, Fig 1 BS2, CL2, CS giving the second data path from base station 2 through the second network link to the control station) wherein said high-speed moving object includes: at least one image capturing unit operable to capture image of inside of a car in said high-speed moving object (not in Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below) a first communication unit operable to transmit the image data captured by said image capturing unit over radio wave of the first frequency, when the control data is received over radio wave of the first frequency (Asanuma, BACKGROUND OF THE INVENTION column 1 approx line 20, refers to: 'the digitized audio data and video data', and Asanuma, Brief Summary of the Invention column 3 approx line 5 recites: 'each of the plurality of mobile stations receives the timing control information notified by the base station and controls the transmission timing of an up-link channel signal transmitted to the base station according to the received timing control information'), and a second communication unit operable to transmit the image data captured by said image capturing unit over radio wave of the second frequency, when the control data is received over radio wave of the second frequency (not taught in Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below) and said control center includes: a communication unit operable to receive the image data transmitted from said first and second base stations via the network (Asanuma, Fig 1 BS1, BS2, CL1, CL2, CS with the two base stations BS1 and BS2, two network links CL1 and CL2 and control station CS), a selection unit operable to select one image data from a plurality of image data, when there are, among the image data, the plurality of image data that have been captured by said identical image capturing unit at the same time (not taught by Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below) and a display unit operable to display the received image data or the selected image data, for each of said image capturing unit (not taught in Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below).

22. **Hamlin teaches:** wherein said high-speed moving object includes: at least one image capturing unit operable to capture image of inside of a car in said high- speed moving object, (Hamlin, **DESCRIPTION OF EMBODIMENTS OF THE INVENTION** column 2 approx line 55: 'The aircraft 2 may have means, including sensors, for acquiring the images directly', the rational for combining Hamlin with Asanuma is that Asanuma covers mobile communications, while Hamlin addresses the specific issues combining surveillance data collection with mobile operation, so the combination is obvious.

23. **Hamlin teaches:** and a second communication unit operable to transmit the image data captured by said image capturing unit over radio wave of the second frequency, when the control data is received over radio wave of the second frequency (Hamlin, **DESCRIPTION OF EMBODIMENTS OF THE INVENTION** column 3 approx line 43: 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals', the rational for combining Hamlin with Asanuma is that Asanuma covers mobile operations, while Hamlin addresses the specific issues combining surveillance data collection with mobile operation with using multiple RF signals. The combination is obvious considering the issue of transmitting multiple RF signals).

24. **Hamlin teaches:** a selection unit operable to select one image data from a plurality of image data, when there are, among the image data, the plurality of image data that have been captured by said identical image capturing unit at the same time (Hamlin, **SUMMARY OF THE INVENTION** column 1 approx line 67: 'which second ground based unit is operable to select images from the recorded electronic image signals', the rational for combining Hamlin with Asanuma is that both systems combine data from multiple mobile devices through multiple base stations, while Hamlin as a surveillance system has as an objective the viewing of the images returned from the various sources.

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25. **Hamlin teaches:** and a display unit operable to display the received image data or the selected image data, for each of said image capturing unit (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 3 approx line 58:** as **'they can be monitored on a television receiver', the rational for combining Hamlin with Asanuma is that both return data from mobile sources, and as a surveillance system, the objective in Hamlin is to select and view the returned images from the various sources).**

26. **As per claim 40, Asanuma teaches:** A radio transmission system for a high-speed moving object, in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object (**Asanuma Fig 1 BS1 and PS1**) said radio transmission system comprising: a first base station and a second base station installed alternately along a path of movement of said high-speed moving object (**Fig 1 BS1 and BS2 and PS1**) said first base station having a first communication unit operable to transmit data to and receive data from said high-speed moving object over radio wave of a first frequency, and to transmit data to and receive data from said control center via a network (**Fig 1 CS, CL1, BS1, PS1 where data is communicated over an RF link between BS1 and PS1 and a network CL1 from BS1 to CS**), and said second base station having a second communication unit operable to transmit data to and receive data from said high-speed moving object over radio wave of a second frequency, and to transmit data to and receive data from said control center via the network (**Fig 1 BS2, CL2, CS, PS1 where data is communicated over an RF link between BS2 and PS1 and a network CL2 from BS2 to CS**) wherein said high-speed moving object includes: a first communication unit operable to transmit and receive data over radio wave of the first frequency (**Fig 4, Uplink Channel**) a second communication unit operable to transmit and receive data over radio wave of the second frequency (**not taught by Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below**) a position detection unit operable to detect a running position of said high-speed moving object (**Asanuma, Background of the Invention, column 1 approx line 65:** 'In contrast, in an up-link channel transmitting signal from each mobile station to the base station, the distance between each mobile station and the base station, that is,

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the propagation delay time of an up-link channel signal transmitted from each mobile station to the base station, differs depending on the location of each mobile station.' Applicant teaches "along a path" with respect to a given antenna, so the one dimensional representation of position in terms of distance, as asserted here in Asanuma, is sufficient to specify location) and a control unit operable to control a characteristic at a time when said first and second communication units transmit and receive the data, based on the detected running position of said high-speed moving object (Asanuma, Fig 2, Phase Difference Sensing Circuit where the phase difference represents mobile position), said control center includes: a communication unit operable to transmit the data to and receive the data from said first and second base stations via the network (Asanuma, Fig 1 BS1, BS2, CL1, CL2, CS) and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (not taught by Asanuma but this is obvious to anyone of ordinary skill in the art at the time of the invention in view of Hamlin as explained below)

27. Hamlin teaches: a second communication unit operable to transmit and receive data over radio wave of the second frequency (Hamlin, Description of Embodiments, column 3 approx line 43: 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals'. The rationale for combining Hamlin with Asanuma is that Asanuma covers mobile operations, while Hamlin addresses the specific issues combining surveillance data collection with mobile operation with using multiple RF signals. The combination is obvious considering the issue of transmitting multiple RF signals).

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28. **Hamlin teaches:** and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information, (Hamlin,

**DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals'. The rational for combining Asanuma and Hamlin is that both transmit data including image data, while Hamlin, as a surveillance system addresses the selection of image data from multiple sources. This is an obvious combination of functions).**

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29. **As per claim 41, Asanuma in view of Hamlin teaches:** The radio transmission system for the high-speed moving object according to Claim 40 (see **treatment of claim 40**) wherein said high-speed moving object further includes a variable attenuate unit operable to adjust output strength of the radio waves to be transmitted by said first and second communication units (Asanuma, Detailed Description of the Invention, column 6 approx line 34: **'The transmission circuit 47 up-converts the transmission signal into a radio-frequency signal and amplifies it to a specific transmission power level', Attenuation and amplification to a specific level both produce the same net effect of control of the transmit power level, and more generally power level control is inherent in amplifier implementation, so no novelty is found here**) and said control unit is operable to determine the output strength of the radio waves to be transmitted, by said first and second communication units (Asanuma, Detailed Description of the Invention, column 6 approx line 34: **'The transmission circuit 47 up-converts the transmission signal into a radio-frequency signal and amplifies it to a specific transmission power level', CDMA systems dynamically control mobile power levels, so controlling transmit power from a central point is not novel**) based on the detected position of said high-speed moving object, and to control said variable attenuate unit to adjust the output strength to be the determined output strength (Asanuma, Background of the Invention, column 1 approx line 65: **'In contrast, in an up-link channel transmitting signal from each mobile station to the base station, the distance between each mobile station and the base station, that is, the propagation delay time of an up-link channel signal transmitted from each mobile station to the base station, differs**

depending on the location of each mobile station', applicant teaches "along a path" with respect to a given antenna, so the one dimensional representation of position in terms of distance, as asserted here in Asanuma, is sufficient to specify location).

30. **As per claim 56**, Asanuma teaches: A control center which manages a condition of a high-speed moving object (**Asanuma, Fig. 1 CS and PS1**), said control center comprising: a communication unit operable to receive image data which is captured by a image capturing unit (**Asanuma, Fig. 2, Reception Data Rch1, and Background To The Invention, column 1 approx line 20: 'the digitized audio data and video data'**), included in the high-speed moving object and transmitted from the high-speed moving object (**Asanuma, Fig. 3, 'Mobile' Transmission Data**) via a plurality of base stations installed along a path of movement of the high- speed moving object (**Asanuma, Fig. 1 BS1 and BS2**); a selection unit operable to select one image data from a plurality of image data, when there are, among the image data, the plurality of image data that have been captured by the identical image capturing unit at the same time (**not taught by Asanuma but this is obvious to anyone of ordinary skill in the art at the time of the invention in view of Hamlin as explained below**); and a display unit operable to display the received image data or the selected image data, for each of the image capturing unit (**not taught by Asanuma but this is obvious to anyone of ordinary skill in the art at the time of the invention in view of Hamlin as explained below**).

31. **Hamlin teaches**: a selection unit operable to select one image data from a plurality of image data (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals', the rational for combining Asanuma and Hamlin is that both carry multiple data including image data, while Hamlin, as a surveillance system addresses the selection of image data from multiple sources, and this is an obvious combination of functions**).

32. **Hamlin teaches:** and a display unit operable to display the received image data or the selected image data, for each of the image capturing unit (**Hamlin, Description of the Invention, column 3 approx line 57: 'they can be monitored on a television receiver by an operator in real-time if desired whilst being simultaneously recorded', the rationale for combining Hamlin with Asanuma is that both mobile systems can transmit images, while Hamlin specifically addresses the issue of displaying those images, the motivation to attach a display to the data system is obvious and not novel).**

33. **As per claim 57, Asanuma teaches:** A radio transmission method for a high-speed moving object (**Asanuma, Fig. 1 PS1**), in which image data is transmitted between the high-speed moving object and a control center that manages a condition of the high-speed moving object via a first base station and a second base station (**Asanuma, Fig. 1 PS1 + BS1 + BS2 + CS**), that are installed alternately along a path of movement of the high-speed moving object (**Asanuma, Fig 1 BS1 + BS2**), said radio transmission method comprising: in the first base station a first communication step of transmitting control data indicating a transmission timing over radio wave of a first frequency at predetermined time intervals", (**Asanuma, Fig 3, 4, 5A, 5B, 6A, 6B, Timing Diagrams with Phase Difference Sensor and Down Link Channel, described in the 'Brief Summary of the Invention' as 'each of the plurality of mobile stations receives the timing control information notified by the base station and controls the transmission timing of an up-link channel signal transmitted to the base station), and receiving the image data transmitted from the high-speed moving object over radio wave of the first frequency (Asanuma, BACKGROUND OF THE INVENTION column 1 line 20 references: 'the digitized audio data and video data' and 'the inverse spread reception signal is demodulated'), and transmitting the image data to the control center via a network (Asanuma, Detailed Description of the Invention, column 4 approx line 64: 'The base stations BS1, BS2, . . . are connected to the control station CS via cable lines CL1, CL2')**, in the second base station a second communication step of transmitting control data indicating a transmission timing over radio wave of a second frequency at predetermined time intervals (**Asanuma, Fig 3, 4, 5A, 5B, 6A, 6B, Timing Diagrams with Phase Difference Sensor**

and Down Link Channel, described in the 'Brief Summary of the Invention' as 'each of the plurality of mobile stations receives the timing control information notified by the base station and controls the transmission timing of an up-link channel signal transmitted to the base station), and receiving the image data transmitted from the high-speed moving object over radio wave of the second frequency", (Asanuma, BACKGROUND OF THE INVENTION column 1 approx line 20:: "the digitized audio data and video data" and 'the digitized audio data and video data' and 'the reception side performs an inverse spread operation'), and transmitting the image data to the control center via the network (Asanuma, Detailed Description of the Invention, column 4 approx line 64:: 'The base stations BS1, BS2, . . . are connected to the control station CS via cable lines CL1, CL2'), in the high-speed moving object an image capturing step of capturing image of inside of a car in the high-speed moving object by an image capturing unit, at least one of which is included in the high-speed moving object (not taught by Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below), a first communication step of transmitting the image data captured by the image capturing unit over radio wave of the first frequency when the control data is received from the first base station over radio wave of the first frequency (Asanuma, Brief Summary of the Invention: 'each of the plurality of mobile stations receives the timing control information notified by the base station and controls the transmission timing of an up-link channel signal transmitted to the base station according to the received timing control information') and a second communication step of transmitting the image data captured by the image capturing unit over radio wave of the second frequency (not taught by Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin, below), when the control data is received from the second base station over radio wave of the second frequency (Asanuma, Fig 1 BS2, PS4 and Fig 5A, mobile timing), and in the control center a communication step of receiving the image data transmitted from the first and second base stations via the network (Asanuma, Fig 1 BS1, BS2, CL1, CL2, CS), a selection step of selecting one image data from a plurality of image data, when there are, among the image data, the plurality of image data that have been captured by the identical image capturing unit at the same time (not taught by Asanuma but this is



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obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below), and a display step of displaying the received image data or the selected image data, for each of the image capturing unit (not taught by Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below).

34. **Hamlin teaches:** in the high-speed moving object an image capturing step of capturing image of inside of a car in the high-speed moving object by an image capturing unit, at least one of which is included in the high-speed moving object (Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 2 approx line 55: 'The aircraft 2 may have means, including sensors, for acquiring the images directly', the rationale for combining Hamlin with Asanuma is that both transmit image data, but Hamlin directly addresses image collection, hence combining the two references is obvious, Hamlin discusses sensor imaging, so the issue of capturing image data inside or outside the car is descriptive in that a camera can be pointed in any direction or positioned in any place on the mobile device).

35. **Hamlin teaches:** and a second communication step of transmitting the image data captured by the image capturing unit over radio wave of the second frequency (Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 3 approx line 43: 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals', the rationale for combining Hamlin with Asanuma is that television signals can be carried on individual frequencies, and while CDMA operates on multiple frequencies per channel, additional CDMA data would go on additional frequencies and hence the combination of the two ideas is obvious).

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36. **Hamlin teaches:** a selection step of selecting one image data from a plurality of image data, when there are, among the image data, the plurality of image data that have been captured by the identical image capturing unit at the same time (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 4 approx line 3: 'The sequences may be selected after substantial analysis by the analysers 4 or 5', the rational for combining Asanuma and Hamlin is that both carry multiple data including image data, while Hamlin, as a surveillance system addresses the selection of image data from multiple sources, this is an obvious combination of functions**).
37. **Hamlin teaches:** and a display step of displaying the received image data or the selected image data, for each of the image capturing unit (**DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 3 approx line 57: 'they can be monitored on a television receiver', the rational for combining Hamlin with Asanuma is that selection, recording and viewing multiple remote video signals, is taught by Hamlin (Summary of Invention, column 1 approx line 55) and the combination of functions is obvious**).
38. **Claims 37 and 38 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Asanuma in view of Hamlin; (US 6907241), and further in view of Haoui (5742640).
39. **As per claim 37, Asanuma in view of Hamlin teaches:** The radio transmission system for the high-speed moving object according to Claim 31 (**see treatment of claim 31**), wherein said first and second communication units of said high-speed moving object are operable to add error-correction data to the image data and transmits the image data added with the error-correction data (**not taught in Asanuma in view of Hamlin but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Haoui below**).

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40. **Haoui teaches:** wherein said first and second communication units of said high-speed moving object are operable to add error-correction data to the image data and transmits the image data added with the error-correction data (**Haoui, Summary of the Invention, paragraph 22, 'A radio forward error correction code (FEC) is generated at the subscriber unit to protect the encoded communication signals during radio transmission', Asanuma also describes receiving FEC data, DETAILED DESCRIPTION OF THE INVENTION column 5 approx line 48: 'In the codec, a deinterleaving process, an error correction decoding process, or an audio decoding process is carried out', and Asanuma and Hamlin already describe carrying image data, so the rationale for combining Haoui with Asanuma and Hamlin is to support the generalization that since CDMA commonly uses FEC encoding on both sides of communications links, and the inclusion of this limitation is obvious).**

41. **As per claim 38, Asanuma in view of Hamlin teaches:** The radio transmission system for the high-speed moving object according to Claim 31 (**see treatment of claim 31**), wherein said first and second communication units of said high-speed moving object are operable to dispersedly arrange the image data per unit predetermined size and transmit the dispersedly arranged image data (**but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Haoui below**), and said first and second communication units of said first and second base stations are operable to re-arrange the dispersedly arranged image data into the original arrangement (**Asanuma, Fig 1 BS1 and BS2, and column 5 approx line 48: 'In the codec, a deinterleaving process, an error correction decoding process, or an audio decoding process is carried out', each base station has similar features and is capable of performing the same error correction process described in the previous paragraph so the enumeration of two base stations is descriptive over the example of a single base station**).

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42. **Haoui does teach:** wherein said first and second communication units of said high-speed moving object are operable to dispersedly arrange the image data per unit predetermined size and transmit the dispersedly arranged image data (Haoui, Fig 5A 2 Slot Interleave, Fig 5B, 2 Slot Deinterleave, in addition Asanuma teaches deinterleaving, Fig 1 BS1 and BS2, and column 5 approx line 48 'In the codec, a deinterleaving process, an error correction decoding process, or an audio decoding process is carried out'. Asanuma and Hamlin already describe carrying image data. So the rational for combining Haoui with Asanuma and Hamlin is to support the generalization that since CDMA commonly uses interleaving/deinterleaving to improve data error avoidance on communications links.).

43. **Claim 42 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Asanuma (US 5983113) in view of Hamlin (US 6907241) and further in view of Li<sup>1</sup> (Southeastcon 2000. Proceedings of the IEEE)

44. **As per claim 42**, Asanuma in view of Hamlin teaches: The radio transmission system for the high-speed moving object according to Claim 40 (see treatment of claim 40), wherein said control unit is operable to determine redundancy of error-correction data for the data based on the detected running position of said high-speed moving object (**not taught in Asanuma in light of Hamlin, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Li below**), and to notify the determined redundancy to said first and second communication units of said high-speed moving object said first and second communication units of said high-speed moving object are operable to add the redundancy and the error-correction data to the data and to transmit the data added with the redundancy and the error-correction data (Asanuma, Fig. 3, #46 MOD and #47

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<sup>1</sup> **Adaptive Reed-Solomon Coding for Wireless ATM Communication**

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**Transmission Circuit where the transmission circuitry formats the transmission data as required for the data link), and said first and second communication units of said first and second base stations are operable to perform error correction for the data using the error-correction data (Asanuma. Fig 2, 'Reception Data Rch1...Rchn', and Asanuma, Detailed Description of the Invention: 'In the codec, a deinterleaving process, an error correction decoding process, or an audio decoding process is carried out', the base stations BS1 and BS2 operate similarly and so the description is equally applicable for all base stations).**

45. **Li teaches:** wherein said control unit is operable to determine redundancy of error-correction data for the data based on the detected running position of said high-speed moving object (Li, section 3.

**ADAPTIVE RS CODING: 'The choice of the  $\lambda$  value depends on the code rate required for different Quality of Service (QoS). The varying code rate of  $(255,k,l)$  creates a wide range of effective error correction capability', the rationale for combining the adaptive QoS in Li with the use of error correction in Asanuma is the desire to maintain a level of data performance in a mobile environment, as such since error correction is a mathematical algorithm that can be varied as required, combining the adaptability of the error correction with the existing use of error correction in a CDMA system is obvious).**

46. **Claims 45-52 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Asanuma in view of Hamlin; (US 6907241), and further in view of McGowan (20020072393).

47. **As per claim 45,** Asanuma teaches: A radio transmission system for a high-speed moving object, in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object, said radio transmission system comprising base stations along a path of movement of said high-speed moving object (Asanuma, Fig 1 PS1, BS1, BS2, CL1, CS column 4 line 57 through column 5 approx line 10), wherein said base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first

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directional antenna being located at one end part in a longitudinal direction of a station platform where said base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said base station is equipped and facing a second directional antenna of said high-speed moving object **(not taught in Asanuma in view of Hamlin but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below)**, and a communication unit which is connected to said first directional antenna and said second directional antenna of said base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said base station over radio wave of a first frequency and via said second directional antenna of said base station over radio wave of a second frequency **(Asanuma, Fig 2, Phase Difference Sensing Circuit and multiple transmission channels)**, and to receive data transmitted from said high-speed moving object over radio wave of the first frequency and radio wave of the second frequency and transmit the data to said control center via the network **(Asanuma, Fig 1 BS1, CL1, CS)**, said high-speed moving object includes: a first communication unit operable to transmit and receive data over radio wave of the first frequency; a second communication unit operable to transmit and receive data over radio wave of the second frequency **(Hamlin, Description of Embodiments, column 3, approx line 43: 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals', the rationale for combining Hamlin with Asanuma is that both are mobile systems, where multiple signals are transmitted by Hamlin. Hamlin's multiple hardware channels is an obvious extension to Asanuma's mobile device)**, said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside **(not taught by Asanuma in view of Hamlin but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below)**, and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said second communication unit, being

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located at the other end part in the moving direction of said high-speed moving object, and facing outside (not taught by Asanuma in view of Hamlin but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below) , and said control center includes: a communication unit operable to transmit the data to and receive the data from said base station via the network (Asanuma, Fig 1 CS, CL1, BS1) and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (not taught by Asanuma but this is obvious to anyone of ordinary skill in the art at the time of the invention in view of Hamlin as explained below).

48. **McGowan teaches:** wherein said base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said base station is equipped and facing a second directional antenna of said high-speed moving object (**McGowan, Fig 2A, ANT1, ANT2, ANT3. The use of multiple antennae to construct directed beams for a base station is similar to the intention to cover a platform with two antennae, even if the antennae are separated by the length of a platform versus the sides of an antenna tower. The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA antenna coverage, and Asanuma is a CDMA radio system, so the two are intended to work with each other).**

49. **McGowan teaches:** said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside (McGowan, Fig. 2A ANT1 teaches the beam formed antenna which loses none of its abilities if it is combined with the mobile [Asanuma, Fig 1 PS1], while replacing an omnidirectional antenna.

**The rational for the combination is that antennae are interchangeable for the express purpose of changing the radiation beam pattern, and that the placement and direction are selected by the user according to the direction the signal is preferred to be transmitted, i.e. along the mobile device).**

50. **McGowan teaches:** and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said second communication unit, being located at the other end part in the moving direction of said high-speed moving object, and facing outside (**McGowan, Fig. 2A ANT2 teaches the beam formed antenna which loses none of its abilities if it is combined with the mobile [Asanuma, Fig 1 PS1], while replacing an omnidirectional antenna. The rational for the combination is that antennae are interchangeable for the express purpose of changing the radiation beam pattern, and that the placement and direction are selected by the user according to the direction the signal is preferred to be transmitted, i.e. along the mobile device).**

51. **Hamlin teaches:** and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals'. The rational for combining Asanuma and Hamlin is that they both carry image data, while Hamlin directly teaches the selection of image data from multiple sources).**

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52. **As per claim 46, Asanuma teaches:** A radio transmission system for a high-speed moving object, in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object, said radio transmission system comprising base stations along a path of movement of said high-speed moving object (**Asanuma, Fig 1 block diagram of a mobile radio system**), wherein said base station includes: a first directional antenna operable to transmit



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and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said base station is equipped and facing a second directional antenna of said high-speed moving object (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**), a third directional antenna operable to transmit and receive radio wave in a particular direction, said third directional antenna being located at back on to said first directional antenna of said base station and facing said second directional antenna of said high-speed moving object; a fourth directional antenna operable to transmit and receive radio wave in a particular direction, said fourth directional antenna being located at back on to said second directional antenna of said base station and facing said first directional antenna of said high-speed moving object (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**), a first communication unit which is connected to said first directional antenna and said third directional antenna of said base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said base station over radio wave of a first frequency and via said third directional antenna of said base station over radio wave of a second frequency (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and to receive data transmitted from said high-speed moving object over radio wave of the first frequency and radio wave of the second frequency and transmit the data to said control center via the network; and a second communication unit which is connected to said second directional antenna and said fourth directional antenna of said base station (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and operable to transmit control data indicating a transmission timing at predetermined time intervals via said second directional antenna of said base station over radio wave of the second frequency and via said fourth directional antenna of said base station over radio wave of the

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first frequency, in synchronization with said first communication unit in order to transmit the control data alternately with the control data transmitted by said first communication unit **(not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below)** said high-speed moving object includes: a first communication unit operable to transmit and receive data over radio wave of the first frequency; a second communication unit operable to transmit and receive data over radio wave of the second frequency; said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said second communication unit, being located at the other end part in the moving direction of said high-speed moving object, and facing outside **(not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below)** and said control center includes: a communication unit operable to transmit the data to and receive the data from said first and second base stations via the network **(Asanuma, Fig 1 CS, CL1, BS1)** and a selection unit operable to select one data from a plurality of data when there are, among the received data, the plurality of data having same information **(not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin as explained below)**

53. **McGowan teaches:** wherein said base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said base station is equipped and facing a second directional antenna of said high-speed moving object **(McGowan, Fig 2A, ANT1, ANT2, ANT3. The rationale for combining Asanuma with McGowan is that McGowan is intended to**

improve CDMA antenna coverage, and Asanuma is a CDMA radio system, so the two are intended to work with each other. The use of multiple antennae in McGowan to construct directed beams for a base station is similar to the applicant's intention to cover a platform with two antennae.

54. **McGowan teaches:** a third directional antenna operable to transmit and receive radio wave in a particular direction, said third directional antenna being located at back on to said first directional antenna of said base station and facing said second directional antenna of said high-speed moving object; a fourth directional antenna operable to transmit and receive radio wave in a particular direction, said fourth directional antenna being located at back on to said second directional antenna of said base station and facing said first directional antenna of said high-speed moving object (**McGowan Fig 1 three sided antenna platform with three antennae shown on one side, amounting up to 9 antenna beams in total, which can be combined with the mobile device in Asanuma Fig 1 PS1. The rational for combining the mobile in Asanuma with the multi-antenna design in McGowan is that special beam patterns have been shown before for cellular systems and it is straightforward to rearrange them to get a different beam pattern, in the application's case of quadruple antenna beams.**

55. **McGowan teaches:** a first communication unit which is connected to said first directional antenna and said third directional antenna of said base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said base station over radio wave of a first frequency and via said third directional antenna of said base station over radio wave of a second frequency (**McGowan, Fig 2A, ANT1, ANT2, ANT3 combines with the timing signals in Asanuma [Fig. 2 Phase Difference Sensing Circuit]. The rational to combine the multiple antennae of McGowan with the multichannel signaling of Asanuma is that McGowan is already intended for use with CDMA networks such as in Asanuma).**

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56. **McGowan teaches:** and to receive data transmitted from said high- speed moving object over radio wave of the first frequency and radio wave of the second frequency and transmit the data to said control center via the network; and a second communication unit which is connected to said second directional antenna and said fourth directional antenna of said base station (**McGowan, Fig 2A, ANT1, ANT2, ANT3 shows 3 antennas in a CDMA installation. The rational for combining the multiple antennae of McGowan with the CDMA architecture of Asanuma is that this is a common implementation of CDMA cellular networks. The use of multiple antennae in McGowan can then be extended directly to Asanuma).**

57. **McGowan teaches:** and operable to transmit control data indicating a transmission timing at predetermined time intervals via said second directional antenna of said base station over radio wave of the second frequency and via said fourth directional antenna of said base station over radio wave of the first frequency, in synchronization with said first communication unit in order to transmit the control data alternately with the control data transmitted by said first communication unit (**McGowan, Fig 2A, ANT1, ANT2, ANT3, antenna tower platform shows 3 antennas in a CDMA installation. Asanuma teaches the multiple channel timing in CDMA, while McGowan teaches the multiple antenna beams used with a CDMA radio system. The rational for combining the multiple antennae of McGowan with the CDMA architecture of Asanuma is that this is an obvious implementation of CDMA cellular networks).**

58. **McGowan teaches:** said high-speed moving object includes: a first communication unit operable to transmit and receive data over radio wave of the first frequency; a second communication unit operable to transmit and receive data over radio wave of the second frequency; said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said

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second communication unit, being located at the other end part in the moving direction of said high-speed moving object, and facing outside (**McGowan, Fig 2A, ANT1, ANT2, ANT3, antenna tower platform**).

**The rational for combining these references is that McGowan addresses multiple antennae in a CDMA system, Hamlin addresses multichannel image capture in a radio network, and Asanuma addresses the basic CDMA radio network. It is obvious that the different aspects can be used in a combined system).**

59. **Hamlin teaches:** and a selection unit operable to select one data from a plurality of data when there are, among the received data, the plurality of data having same information (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals'**. **The rational for combining Hamlin with Asanuma is that Hamlin addresses the selection of image data from multiple sources in a radio network**).

60. **As per claim 47, Asanuma teaches:** A radio transmission system for a high-speed moving object, in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object, said radio transmission system comprising a first base station and a second base station installed alternately along a path of movement of said high-speed moving object (**Asanuma, Fig 1 block diagram of a mobile radio system**) wherein said first base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said first base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said first base station is equipped and facing a second directional antenna of said high-speed moving object (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and a first communication unit which is

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connected to said first directional antenna and said second directional antenna of said first base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said first base station over radio wave of a first frequency and via said second directional antenna of said first base station over radio wave of a fourth frequency, and to receive data transmitted from said high-speed moving object over radio wave of the first frequency and radio wave of the fourth frequency and transmit the data to said control center via the network (**not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) said second base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said second base station is equipped and facing said first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said second base station is equipped and facing said second directional antenna of said high-speed moving object; and a second communication unit which is connected to said first directional antenna and said second directional antenna of said second base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said second base station over radio wave of a third frequency and via said second directional antenna of said second base station over radio wave of a second frequency, and to receive data transmitted from said high-speed moving object over radio wave of the third frequency and radio wave of the second frequency and transmit the data to said control center via the network (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) said high-speed moving object includes: a first communication unit operable to transmit the data over radio wave of a corresponding frequency in the first frequency and the third frequency, when the control data is received over radio wave of one of the first frequency and the third frequency; a second communication unit operable to transmit the data over radio wave of a corresponding frequency in the fourth frequency and the second frequency, when the control data is received over radio wave of one of the fourth frequency and the second

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frequency; said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said second communication unit, being located at the other end part in the moving direction of said high-speed moving object, and facing outside (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and said control center includes: a communication unit operable to transmit the data to and receive the data from said first and second base stations via the network (**Asanuma, Fig 1 CS, CL1, BS1**) and a selection unit operable to select one data of a plurality of data, when there are, among the received data, the plurality of data having same information (**not taught in Asanuma but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin as explained below**)

61. **McGowan teaches:** wherein said first base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said first base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said first base station is equipped and facing a second directional antenna of said high-speed moving object (**McGowan, Fig 2A, ANT1, ANT2, ANT3. The use of multiple antennae to construct directed beams for a base station is similar to the intention to cover a platform with two antennae. The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA RF coverage with multiple antennas, and since Asanuma is a CDMA radio system, the two are intended to work with each other**).

62. **McGowan teaches:** and a first communication unit which is connected to said first directional antenna and said second directional antenna of said first base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said first base station over radio wave of a first frequency and via said second directional antenna of said first base station over radio wave of a fourth frequency, and to receive data transmitted from said high-speed moving object over radio wave of the first frequency and radio wave of the fourth frequency and transmit the data to said control center via the network (**McGowan Fig 1 ANT1, ANT2, ANT3, antenna tower platform. The rationale to combine McGowan's generalized CDMA multiple antenna approach is that it is intended to work with a CDMA system as in Asanuma, so the combination is obvious**).

63. **McGowan teaches:** said second base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said second base station is equipped and facing said first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said second base station is equipped and facing said second directional antenna of said high-speed moving object; and a second communication unit which is connected to said first directional antenna and said second directional antenna of said second base station, and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said second base station over radio wave of a third frequency and via said second directional antenna of said second base station over radio wave of a second frequency, and to receive data transmitted from said high-speed moving object over radio wave of the third frequency and radio wave of the second frequency and transmit the data to said control center via the network (**McGowan Fig 1 ANT1, ANT2, ANT3, antenna tower platform. The rationale to combine McGowan with Asanuma is that McGowan generalizes the multiple antenna application for CDMA systems, such as used in Asanuma, and Asanuma provides timing and network control features of CDMA**).



64. **McGowan teaches:** said high-speed moving object includes: a first communication unit operable to transmit the data over radio wave of a corresponding frequency in the first frequency and the third frequency, when the control data is received over radio wave of one of the first frequency and the third frequency; a second communication unit operable to transmit the data over radio wave of a corresponding frequency in the fourth frequency and the second frequency, when the control data is received over radio wave of one of the fourth frequency and the second frequency; said first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being connected to said first communication unit, being located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being connected to said second communication unit, being located at the other end part in the moving direction of said high-speed moving object, and facing outside (**McGowan Fig 1 ANT1, ANT2, ANT3, antenna tower platform. The rational to combine McGowan with Asanuma is that McGowan generalizes the multiple antenna application for CDMA systems, such as used in Asanuma, while Asanuma provides the channel and timing control necessary to operate the network).**

65. **Hamlin teaches:** and a selection unit operable to select one data of a plurality of data, when there are, among the received data, the plurality of data having same information (Hamlin, **DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals'.** The rational for combining Hamlin with Asanuma is that Hamlin addresses the selection of image data from multiple sources in a radio network, such as in Asanuma).

66. **As per claim 48, Asanuma teaches:** A radio transmission system for a high-speed moving object, (**Asanuma, Fig 1 BS1, PS1 column 4 line 57 through column 5 approx line 10**) in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object, said radio transmission system comprising a first base station and a second

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base station installed alternately along a path of movement of said high-speed moving object (**Asanuma, Fig 1 BS1, BS2, CL1, CL2, CS, PS1**) wherein said first base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said first base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said first base station is equipped and facing a second directional antenna of said high-speed moving object (**not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and a first communication unit which is connected to said first directional antenna and said second directional antenna of said first base station (**not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below**) and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said first base station over radio wave of a first frequency and via said second directional antenna of said first base station over radio wave of a fourth frequency (**Asanuma, Fig 2 generates multiple timing patterns for individual channels as shown**) and to receive data transmitted from said high-speed moving object over radio wave of the first frequency and radio wave of the fourth frequency (**Asanuma, Fig 2 shows multiple channel operation in this figure, which generalize to the separate frequencies in the claim**) and transmit the data to said control center via the network (**Asanuma, Fig 1 CS, CL1, BS**) said second base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said second base station is equipped and facing said first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said second base station is equipped and facing said second directional antenna of said high-speed moving object (**not taught in Asanuma, but this is obvious to one of ordinary skill**

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in the art at the time of the invention, in light of McGowan below) and a second communication unit which is connected to said first directional antenna and said second directional antenna of said second base station (not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below) and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said second base station over radio wave of a third frequency and via said second directional antenna of said second base station over radio wave of a second frequency, and to receive data transmitted from said high-speed moving object over radio wave of the third frequency and radio wave of the second frequency and transmit the data to said control center via the network (not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below) said high-speed moving object includes: a first communication unit operable to transmit the data over radio wave of the first frequency, when the control data is received over radio wave of the first frequency; a second communication unit operable to transmit the data over radio wave of the second frequency, when the control data is received over radio wave of the second frequency; a third communication unit operable to transmit the data over radio wave of the third frequency, when the control data is received over radio wave of the third frequency; a fourth communication unit operable to transmit the data over radio wave of the fourth frequency, when the control data is received over radio wave of the fourth frequency; a first directional antenna connected to said first communication unit and a third directional antenna connected to said third communication unit (not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below) each of which is operable to transmit and receive radio wave in a particular direction, located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna connected to said second communication unit and said fourth directional antenna connected to said fourth communication unit, each of which is operable to transmit and receive radio wave in a particular direction, located at the other end part in the moving direction of said high-speed moving object, and facing outside (not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan below) and said control center includes: a communication unit operable to transmit the data

to and receive the data from said first and second base stations via the network; and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (**not taught in Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin as explained below**)

67. **McGowan teaches:** wherein said first base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said first base station is equipped and facing a first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said first base station is equipped and facing a second directional antenna of said high-speed moving object (**McGowan, Fig 2A ANT1, ANT2, ANT3, antenna tower platform. The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA antenna coverage, and Asanuma is a CDMA radio system, so the two are intended to work with each other. The use of multiple antennae to construct directed beams for a base station is similar to covering a platform with two antennae.**)

68. **McGowan teaches:** and a first communication unit which is connected to said first directional antenna and said second directional antenna of said first base station (**McGowan, Fig 2A ANT1, ANT2, ANT3, #220, #222, #224 using of multiple antennae connected to individual transceivers. The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA antenna coverage for CDMA radio systems like those CDMA systems described in Asanuma.**)

69. **McGowan teaches:** said second base station includes: a first directional antenna operable to transmit and receive radio wave in a particular direction, said first directional antenna being located at one end part in a longitudinal direction of a station platform where said second base station is equipped and facing said first directional antenna of said high-speed moving object; a second directional antenna operable to transmit and receive radio wave in a particular direction, said second directional antenna being located at the other end part in the longitudinal direction of the station platform where said second base station is equipped and facing said second directional antenna of said high-speed moving object (McGowan, Fig 2A ANT1, ANT2, ANT3, #220, #222, #224 showing the use of multiple antennae connected to individual transceivers). The rationale for combining McGowan with Asanuma is that McGowan is intended to improve CDMA antenna coverage in particular directions, and as such would be used with CDMA in Asanuma).

70. **McGowan teaches:** and a second communication unit which is connected to said first directional antenna and said second directional antenna of said second base station (McGowan, Fig 2A ANT1, ANT2, ANT3, #220, #222, #224 showing the use of multiple antennae connected to individual transceivers. The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA antenna coverage as would be used with Asanuma).

71. **McGowan teaches:** and operable to transmit control data indicating a transmission timing at predetermined time intervals via said first directional antenna of said second base station over radio wave of a third frequency and via said second directional antenna of said second base station over radio wave of a second frequency, and to receive data transmitted from said high-speed moving object over radio wave of the third frequency and radio wave of the second frequency and transmit the data to said control center via the network (McGowan, Fig 2A ANT1, ANT2, ANT3, antenna tower platform. The rationale to combine the multiple antennae of McGowan for a CDMA system with the multichannel signaling and timing in a CDMA network as in Asanuma).

72. **Hamlin teaches:** said high-speed moving object includes: a first communication unit operable to transmit the data over radio wave of the first frequency, when the control data is received over radio wave of the first frequency; a second communication unit operable to transmit the data over radio wave of the second frequency, when the control data is received over radio wave of the second frequency; a third communication unit operable to transmit the data over radio wave of the third frequency, when the control data is received over radio wave of the third frequency; a fourth communication unit operable to transmit the data over radio wave of the fourth frequency, when the control data is received over radio wave of the fourth frequency (**Hamlin, Description of Embodiments, column 3 approx line 43 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals'.** The rationale for combining Hamlin's teaching of multiple frequency signals with Asanuma is that Asanuma covers mobile communications, while Hamlin addresses the specific issues combining surveillance data collection with mobile operation, so the combination is obvious).

73. **McGowan teaches:** a first directional antenna connected to said first communication unit and a third directional antenna connected to said third communication unit, each of which is operable to transmit and receive radio wave in a particular direction, located at one end part in a moving direction of said high-speed moving object, and facing outside; and said second directional antenna connected to said second communication unit and said fourth directional antenna connected to said fourth communication unit, each of which is operable to transmit and receive radio wave in a particular direction, located at the other end part in the moving direction of said high-speed moving object, and facing outside (**McGowan, Fig 2A ANT1, ANT2, ANT3, antenna tower platform.** The rationale for combining Asanuma with McGowan is that McGowan is intended to improve CDMA antenna coverage with multiple antennas as could be used with Asanuma).

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74. **Hamlin teaches:** and said control center includes: a communication unit operable to transmit the data to and receive the data from said first and second base stations via the network; and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (**Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION: 'The purpose of the remote image analyser 4 is to select signals from the received combined electronic image signals'.** The rational for combining Hamlin with Asanuma is that Hamlin addresses the selection of image data from multiple sources in a radio network, such as in Asanuma).

75. **As per claim 49,** Asanuma combined with Hamlin and McGowan teach: The radio transmission system for the high-speed moving object according to Claim 48 (**see claim 48**) wherein said high-speed moving object (**Asanuma Fig 1 PS1**) includes a plurality of Units which are connected to one another" (**Asanuma, Fig 2**) said Unit having said first directional antenna, said second directional antenna, said third directional antenna, said fourth directional antenna (**not taught by Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan as explained below**) said first communication unit, said second communication unit, said third communication unit, and said fourth communication unit (**Asanuma Fig 2**) said directional antenna located at an end part where one of said Unit is connected to another Unit is used for communication between said Units, and said directional antennae located at both end parts of a whole structure in which the plurality of the Units are connected to one another are used for communication with said first base station and said second base station (**not taught by Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of McGowan as explained below**).

76. **McGowan teaches:** said Unit having said first directional antenna, said second directional antenna, said third directional antenna, said fourth directional antenna (**McGowan, Fig 1 ANT1, ANT2, ANT3 and antenna tower platform**).

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77. **McGowan teaches:** said directional antenna located at an end part where one of said Unit is connected to another Unit is used for communication between said Units, and said directional antennae located at both end parts of a whole structure in which the plurality of the Units are connected to one another are used for communication with said first base station and said second base station (**McGowan, Fig 1 ANT1, ANT2, ANT3 and antenna tower platform, and transceivers 220, 222, 224. The term 'Units' as used in this claim is read to refer to a radio with an antenna, so as Asanuma teaches multiple transmitter/receiver signal paths, and this combines with McGowan's multiple directional antennae and transceivers. McGowan's example of antenna arrangement is shown in the layout of the antenna platform, showing prior art related to antenna placement. The further rational for combining these technologies is that McGowan's multiple antenna system is generally applicable to CDMA installations, and there is no loss of generality here when discussing physically pointing a directional antenna forward or backwards in a given installation).**

78. **As per claim 50, Asanuma combined with Hamlin and McGowan teach:** The radio transmission system for the high-speed moving object according to Claim 49 (**see claim 49**) comprising a switching unit operable to select from the first to fourth frequencies a frequency of radio wave to be used for the communication between said Units and to select from said first to fourth communication units a communication unit to be used for the communication between said Units, based on the frequencies of the radio waves used for the communication with said first base station and said second base station, and said selected communication unit is operable to perform the communication between said Units using radio wave of the selected frequency (**Asanuma, DETAILED DESCRIPTION OF THE INVENTION column 7 approx line 19: 'from this time on, CDMA communication is started between the individual mobile stations PS1 to PS3 and the base station BS1, using the PN codes and orthogonal codes allocated to the mobile stations', and multiple base stations are identified Asanuma, Fig 1 BS1, BS2, PS1).**



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79. **As per claim 51**, Asanuma with Hamlin and McGowan teach: The radio transmission system for the high-speed moving object according to Claim 50 (**see claim 50**) wherein said switching unit is operable to select the frequency of the radio wave and said communication unit which are to be used for the communication between said Units, according to a change of the frequencies of the radio waves and said communication units which are used for the communication with said first and second base stations, and to switch to the selected frequency and communication unit (**Asanuma, DETAILED DESCRIPTION OF THE INVENTION column 7 approx line 19 'from this time on, CDMA communication is started between the individual mobile stations PS1 to PS3 and the base station BS1, using the PN codes and orthogonal codes allocated to the mobile stations', where the 'switching unit' is necessarily some form of microprocessor, and the specification of new broadcast information is received from the base station and multiple base stations are identified as in Fig 1 BS1, BS2, PS1**).

80. **As per claim 52**, Asanuma with Hamlin and McGowan teach: The radio transmission system for the high-speed moving object according to Claim 50 (**see claim 50**) wherein said selected communication unit is operable to attenuate transmission output of the radio wave (**Asanuma, DETAILED DESCRIPTION OF THE INVENTION column 6 approx line 34: 'The transmission circuit 47 up-converts the transmission signal into a radio-frequency signal and amplifies it to a specific transmission power level'. The different methods for control of the transmission power levels produce the same net effect of control of the transmit power, for both controlled attenuation and controlled gain**).

81. **Claims 32-36, and 39 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Asanuma in view of Hamlin as applied to claim 31 above, and further in view of Monroe (US 2004/0008253).

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82. **As per claim 32**, Asanuma in view of Hamlin teaches: "The radio transmission system for the high-speed moving object according to Claim 31 (**see claim 31**) wherein said image capturing unit is operable to add time information indicating a time of the capturing to the captured image data (not taught by **(not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below)** and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the time information (**not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below**).

83. **Monroe teaches** wherein said image capturing unit is operable to add time information indicating a time of the capturing to the captured image data (**Monroe, paragraph 109 'As each data event, image or frame is received, it is filed with a unique identifier comprising date, time, camera or encoder and/or file information'. Monroe labels sequential data with multiple labels, as described and showing prior art, and it is rational to have applied these teachings in combination with Asanuma and Hamlin, which also collect sequential image data for this reason).**

84. **Monroe teaches:** and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the time information (**Monroe, paragraph 109 'This allows full search capability by date, time, event, user, and/or camera on command, greatly enhancing retrieval and reconstruction of events'). The rational for combining Asanuma and Hamlin with Monroe is that Monroe gives the use of search capability which is inherently related to version comparison and selection).**

85. **As per claim 33**, Asanuma in view of Hamlin and further in view of Monroe teaches: The radio transmission system for the high-speed moving object according to Claim 32 (**see claim 32**) wherein said image capturing unit is further operable to add identification information for identifying said image capturing unit to the captured image data (**not taught in Asanuma, but this would have been obvious**

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**to one of ordinary skill in the art at the time of the invention, in light of Monroe below)** and said selection unit is operable to determine whether or not the image data has been captured by said identical image capturing unit at the same time, based on the identification information and the time information **(not taught in Asanuma, but this but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below).**

86. **Monroe teaches:** wherein said image capturing unit is further operable to add identification information for identifying said image capturing unit to the captured image data **(Monroe, paragraph 109 'As each data event, image or frame is received, it is filed with a unique identifier comprising date, time, camera or encoder and/or file information'. Monroe labels sequential data with multiple labels, as described and showing prior art, and it is rational to have applied these teachings in combination with Asanuma and Hamlin, which also collect sequential image data for this reason).**

87. **Monroe teaches:** and said selection unit is operable to determine whether or not the image data has been captured by said identical image capturing unit at the same time, based on the identification information and the time information **(Monroe, paragraph 109 'The user may scan forward and backward from an image, event, or time, and may select another camera to determine the image at the same time and date'. The rational for combining Asanuma and Hamlin with Monroe is that Monroe gives the use of search capability which is inherently related to version comparison and selection).**

88. **As per claim 34,** Asanuma in view of Hamlin teaches "The radio transmission system for the high-speed moving object according to claim 31 (see claim 31) wherein said image capturing unit is operable to add a sequence number to each predetermined unit in the captured image data **(not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below)** and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the

sequence number (not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below).

89. **Monroe teaches:** wherein said image capturing unit is operable to add a sequence number to each predetermined unit in the captured image data (Monroe, paragraph 75 'Basically, the location, type and priority of event are "tagged" at the point where a sensor picks up the event and event data is then forwarded only to selected stations on the network as required by a qualification system and a priority hierarchy'. The rational to combine Monroe with Asanuma is that Monroe talks about labeling the video stream for use in a generalized surveillance and data collection system. Labeling is generalizable to sequential numbers or time codes).

90. **Monroe does teaches:** and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the sequence number (Monroe, paragraph 109 'The user may scan forward and backward from an image, event, or time, and may select another camera to determine the image at the same time and date'). Monroe is a generalized surveillance and data collection and sequence number used here is generalizable to other 'event' data, and thus it is rational to have applied these teachings in combination with Asanuma and Hamlin).

91. **As per claim 35,** Asanuma in view of Hamlin and further in view of Monroe teaches "The radio transmission system for the high-speed moving object according to claim 34 (see claim 34) wherein said image capturing unit is further operable to add identification information for identifying said image capturing unit to the captured image data (not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below) and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the identification information and the sequence

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number (not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below).

92. **Monroe teaches:** wherein said image capturing unit is further operable to add identification information for identifying said image capturing unit to the captured image data (**Monroe, paragraph 75 'Basically, the location, type and priority of event are "tagged" at the point where a sensor picks up the event and event data is then forwarded only to selected stations on the network as required by a qualification system and a priority hierarchy'. The rational to combine Monroe with Asanuma is that Monroe talks about labeling the video stream for use in a generalized surveillance and data collection system. Labeling is generalizable to identification information).**

93. **Monroe teaches:** and said selection unit is operable to determine whether or not the image data have been captured by said identical image capturing unit at the same time, based on the identification information and the sequence number (**Monroe, paragraph 109 'The user may scan forward and backward from an image, event, or time, and may select another camera to determine the image at the same time and date'. The rational for combining Monroe with Asanuma and Hamlin is that Monroe gives the use of image search capability which is inherently related to version comparison and selection).**

94. **As per claim 36,** Asanuma in view of Hamlin teaches: "The radio transmission system for the high-speed moving object according to Claim 31 (see claim 31) wherein said control center further includes an instruction unit operable to designate said image capturing unit by identification information for identifying said image capturing unit and to instruct said high-speed moving object to capture image by said designated image capturing unit (not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below) said communication unit of said control center is operable to transmit the instruction including the identification information to said first and second base stations via the network, said first and second communication

units of said first and second base stations are operable to add the identification information to the control data and then transmit the control data added with the identification information (**Asanuma, Fig 1 CS, CL1, BS1**) and said first and second communication units of said high-speed moving object are operable to determine the image data to be transmitted, based on the identification information added to the control data (**not taught by Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below**).

95. **Monroe teaches:** wherein said control center further includes an instruction unit operable to designate said image capturing unit by identification information for identifying said image capturing unit and to instruct said high-speed moving object to capture image by said designated image capturing unit (**Monroe, paragraph 40 'Typically the main monitoring station or control center station will include a network connection for relaying the down-linked information to the various other mobile and fixed monitoring stations'. A control station implies a computer, or 'instruction unit'. The rationale to combine Monroe with Asanuma and Hamlin is to control the assets of the surveillance system, directly applicable to monitoring the interior of a mobile device**).

96. **Monroe teaches:** and said first and second communication units of said high-speed moving object are operable to determine the image data to be transmitted, based on the identification information added to the control data (**Monroe, paragraph 32 'The system also provides real-time transmission of information to remote vehicles and personnel, and allows those vehicles to select and process information remotely'. The rationale for combining Monroe with Asanuma and Hamlin is that Monroe directs the remote mobile units to select and transmit specific data, an obvious extension to controlling data transmit timing and labeling**).

97. **As per claim 39, Asanuma in view of Hamlin teaches:** The radio transmission system for the high-speed moving object according to Claim 31 (**see claim 31**) wherein said control center further includes: a position detection unit operable to detect a position of said high-moving object (**Asanuma,**

**DETAILED DESCRIPTION OF THE INVENTION** paragraph 8 'In contrast, in an up-link channel transmitting signal from each mobile station to the base station, the distance between each mobile station and the base station, that is, the propagation delay time of an up-link channel signal transmitted from each mobile station to the base station, differs depending on the location of each mobile station'. Constraining the mobile location to be located "along a path" makes distance estimation a one dimensional surrogate for position) and a control unit operable to perform transmission instruction by instructing said first and second base stations to transmit the control data, based on the detected position of said high- speed moving object (not taught in Asanuma, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Monroe below) and said first and second communication units of said first and second base stations are operable to transmit the control data according to the transmission instruction from said control center (Asanuma, Fig 4, Downlink Channel).

98. **Monroe teaches:** and a control unit operable to perform transmission instruction by instructing said first and second base stations to transmit the control data, based on the detected position of said high- speed moving object (Monroe, paragraph 40 'The station will include a server for storing and managing any data transmitted by the vehicle or transport. It will match the data with maps, vehicle design plans and real time sensor data and onboard conditions. Typically the main monitoring station or control center station will include a network connection for relaying the down-linked information to the various other mobile and fixed monitoring stations'. In Monroe the 'management' of data transmission can be equated to controlling data transmission timing. The rational for combining Monroe with Asanuma is that Monroe collects image data and controls it's transmission on a mobile communications system just as Asanuma controls data transmission timing on it's mobile system, so the combination is obvious).

99. **Claims 43 and 44 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Asanuma in view of Hamlin and further in view of Sawada (US 2003/0143997).

100. **As per claim 43**, Asanuma in view of Hamlin teaches: The radio transmission system for the high-speed moving object according to claim 40 (**see claim 40**) wherein said control center further includes a setting unit operable to transmit, to said high-speed moving object, a characteristic table in which the running position of said high-speed moving object corresponds to the characteristic, and said control unit of said high-speed moving object is operable to control the characteristic at a time when said first and second communication units transmit the data, based on the detected running position of said high-speed moving object and the characteristic table (**not taught by Asanuma in view of Hamlin, but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Sawada below**).

101. **Sawada teaches:** wherein said control center further includes a setting unit operable to transmit, to said high-speed moving object, a characteristic table in which the running position of said high-speed moving object corresponds to the characteristic, and said control unit of said high-speed moving object is operable to control the characteristic at a time when said first and second communication units transmit the data, based on the detected running position of said high-speed moving object and the characteristic table (**Sawada, Fig 5, #62, Location Area Control Table. For purposes of claim evaluation the term 'characteristic table' is assumed to imply some form of power control and position information, relevant to transmit power for the mobile device, and the 'characteristic' to be some form of position and power data. The rationale for combining the table in Sawada with the mobile system of Asanuma is that there is an obvious extension of internal state information needed to describe a power table**).

102. **As per claim 44**, Asanuma teaches: A radio transmission system for a high-speed moving object, in which data is transmitted between said high-speed moving object and a control center that manages a condition of said high-speed moving object (**Asanuma, Fig 1 PS1, BS1, CL1, CS column 4 line 57 through column 5 approx line 10**), said radio transmission system comprising: a first base station and a



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second base station installed alternately along a path of movement of said high-speed moving object (Asanuma, Fig 1 BS1, BS2, PS1), said first base station having a first communication unit operable to transmit data to and receive data from said high-speed moving object over radio wave of a first frequency, and to transmit data to and receive data from said control center via a network (Asanuma, Fig 2, base station block diagram, described at column 5 approx line 10 through column 6 approx line 6), and said second base station having a second communication unit operable to transmit data to and receive data from said high-speed moving object over radio wave of a second frequency, and to transmit data to and receive data from said control center via the network (Asanuma, Fig 1 BS2, PS2, CL2, CS), wherein said high-speed moving object includes: a first communication unit operable to transmit and receive data over radio wave of the first frequency (Asanuma, Fig 1 BS1, and PS1);, a second communication unit operable to transmit and receive data over radio wave of the second frequency (**not taught by Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below**); a measurement unit operable to measure strength of the radio waves received from said first and second base stations; and a control unit operable to control a characteristic at a time when said first and second communication units transmit and receive the data, based on the measured strength of the radio waves (**not taught by Asanuma but this would have been obvious to one of ordinary skill in the art at the time of the invention, in light of Sawada below**), and said control center includes: a communication unit operable to transmit the data to and receive the data from said first and second base stations via the network (Asanuma, Fig 1 CS, CL1, CL2, BS1, BS2), and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (**not taught by Asanuma, but this is obvious to one of ordinary skill in the art at the time of the invention, in light of Hamlin below**).

103. **Hamlin teaches:** a second communication unit operable to transmit and receive data over radio wave of the second frequency, (Hamlin, Description of Embodiments, column 3, approx line 43: 'Aircraft 1 carry radio equipment with adequate bandwidth to receive and transmit single and multiple television signals', the rationale for combining Hamlin's multiple transmitters with

**Asanuma's mobile radio implementation is that Hamlin's use of multiple channels is an obvious extension to the operation of the mobile unit in Asanuma).**

104. **Sawada teaches:** and a control unit operable to control a characteristic at a time when said first and second communication units transmit and receive the data, based on the measured strength of the radio waves (Sawada, Fig 5, #62, Location Area Control Table, the use of the term 'characteristic table' in the specification as a short hand for a table of range versus transmit power figures, generated by the base station and intended for transmitter power control. The rational for combining Sawada and Asanuma is that Sawada offers a solution for the problem of improving the reliability of the radio link over distance, different from the CDMA approach of giving continuous feedback from the base station for mobile power levels, which might be useful in the geographic conditions described in the specification).

105. **Hamlin teaches:** and a selection unit operable to select one data from a plurality of data, when there are, among the received data, the plurality of data having same information (Hamlin, DESCRIPTION OF EMBODIMENTS OF THE INVENTION column 4 approx line 3: 'The sequences may be selected after substantial analysis by the analysers 4 or 5', the rational for combining Hamlin with Asanuma is that Hamlin addresses the selection of image data from multiple sources in a radio network).

### ***Prior Art Not Referenced:***

106. The following patent references were deemed of possible interest for further examination, having to do with mobile data communication, but were not referenced in this action: US-20010016504, US-20020025810, US-20020027891, US-5657375, US-5787352, US-5943618, US-6128498, US-6144648, US-6163696, US-6195546, US-6289217, US-6324207, US6385460, US-6434130, US-6473466, US-6522873, US-6546249, US-6546255, US-6597906, US-6608823, US-6611776, US-20030053412, US-6,636,493.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLA RADONIC whose telephone number is (571) 270-5246. The examiner can normally be reached on IFW work schedule, with some Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on (571) 272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NR

/ALMIS JANKUS/

Acting Primary Examiner of Art Unit 4100